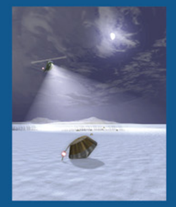
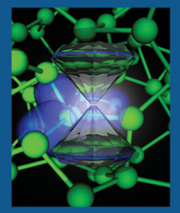
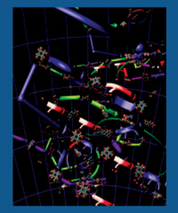
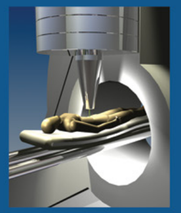
NEWSLINE

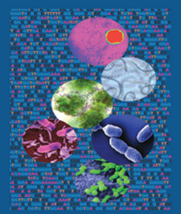
Published for the employees of Lawrence Livermore National Laboratory January 5, 2007 Vol. 32, No. 1

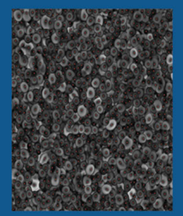





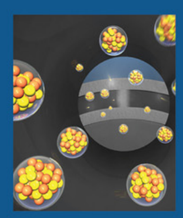


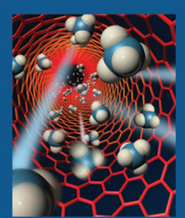


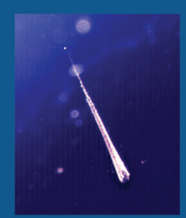






2006 IN REVIEW



LOOKING BACK AT 2006

The Laboratory rises to the challenges of 2006

The Laboratory has always thrived in times of uncertainty and challenge, George Miller said shortly after he was named the Laboratory's 10th director in March of last year. And the year 2006 was no exception.

"We've managed to translate past uncertainties and challenges into opportunities to meet our national priorities," Miller told employees in his first all-hands meeting as director.

During 2006, the Lab rose to the challenge by laying the groundwork for transition to a new contractor; achieving milestones for stockpile stewardship and other national security missions; realigning to better meet national security challenges; and continuing to produce award-winning science and technology for the benefit of the nation.

Early in the year the National Nuclear Security Administration (NNSA) unveiled its plan to transform the weapons complex over the next 20 years, called "Complex 2030." While the plan could bring changes to the work conducted at Site 300 and the Superblock, the Lab will play a central role as a "key component of the future of the nuclear weapons program and national security as a whole," according to Tom D'Agostino, NNSA deputy administrator for Defense Programs.

> *We've managed to translate past uncertainties and challenges into opportunities to meet our national priorities.*
>
> *– George Miller*

Leadership and realignment

After assuming directorship of the Laboratory, Miller quickly named new members to his management team to "provide the additional senior support to lead the Laboratory into the future." Miller named Dave Leary acting deputy director for Operations; Bruce Warner acting associate director-at-large; Larry Ferderber acting chief of staff; and Barbara Peterson transition manager.

Also in March, Associate Director Ray Juzaitis announced a realignment of the Lab's Nonproliferation, Arms Control and International Security (NAI) Directorate, a change "dictated by the need to address the dynamic nature of the challenging global security environment as well as to better support our major sponsors." NAI was renamed the Nonproliferation, Homeland and International Security (NHI) Directorate.

In August, Miller announced the merger of the Chemistry and Materials Science and Biosciences directorates into the Chemistry, Materials and Life Sciences Directorate, led by Associate Director Tomás Díaz de la Rubia.

Mission achievements

The Laboratory continued to deliver on its mission obligations. Proposed designs for the Reliable Replacement Warhead (RRW) were submitted to NNSA on time by the Laboratory and Los Alamos National Laboratory. Miller called the Livermore team's work on the RRW design, led by Bruce Goodwin, "outstanding."

Livermore hosted the first Laboratory Directors Joint Assessment Review with Los Alamos weapons program leaders, including new LANL Director Michael Anastasio, to address certification of the stockpile by the secretaries of Energy and Defense.

Other achievements include the completion of plutonium studies; unprecedented simulations on the Advanced Simulation and Computing Program's BlueGene/L supercomputer; and the National Ignition Facility achieving important steps toward becoming a user facility in 2009.

In the area of nonproliferation and homeland security, the Lab also continued to make contributions including: the development of a rapid assay for foot-in-mouth and related diseases; development of a virulence gene identification tool for countering bioterrorism; breakthroughs in radiation detection technology; and playing a key role in the U.S. Department of Homeland Security's air cargo explosive detection project.

Science and technology

The centennial of the San Francisco Earthquake in April was occasion for the Laboratory to showcase computer modeling and simulation capabilities developed to help scientists better understand the impact of ground shaking on a variety of buildings and structures.

From January to December, Laboratory scientists were key players in the Stardust space capsule that returned to Earth after a seven-year mission. Lab scientists were one the first teams to receive samples to discover some of the mysteries of the early universe.

Other notable science and technology contributions this year include: LLNL climate scientists led a national Academy of Science study indicating human activity has increased sea surface temperatures in hurricane breeding grounds, causing more frequent and intense storms; Lab researchers played a lead role in the Titan petawatt-class laser, which began operation in July; and Lab scientists played a key role in the development of the primary mirror for the BLAST telescope, which will allow scientists to view starburst galaxies with unprecedented resolution.

Laboratory research was recognized with numerous awards, including six R&D 100 awards. See pages 6 and 7 for a highlighted list.

Operations

The Laboratory enhanced physical security in a number of ways: a new buffer area around the Superblock was completed; the Lab acquired a mobile weapons platform; and vaults were upgraded. NNSA also gave the Laboratory sole responsibility for security in the East Avenue Corridor.

LLNL took a proactive approach to preparing for the new federal "worker safety and health" rule and was the first contractor in the DOE complex to submit plans for review. After reviewing the FY06 Appendix F ratings in October, Miller reported that: "The Laboratory has had a very good year."

In the following pages is a month-by-month listing of highlights for Science and Technology, People and Operations. New in this year's "Looking back" edition is a listing of awards and recognition on pages 6 and 7.

LOOKING BACK AT 2006

JANUARY

SCIENCE & TECHNOLOGY

The Stardust space capsule lands back on Earth after a seven-year mission. Lab scientists are one of the first teams to receive samples for analysis.

Scientists in the Materials Science and Technology Division create a strengthening technique to make carbon nanotubes more durable.

E.O. Lawrence Award winner Evan Reed works with MIT to discover a new source of coherent optical radiation that is distinct from lasers and free-electron lasers. The application could result in a new diagnostic tool to determine the properties of shock waves.

NIF receives a three-foot tall, 200-pound glass sculpture named "After Glow" in the lobby of the National Ignition Facility. Created by artist Christopher Ries, the sculpture is made from the same type of glass used in NIF optics. A ceremony honored Ries, as well as Schott North America, the company that provides the glass for NIF laser optics. Ries serves as Schott's artist-in-residence.

The Defense and Nuclear Technologies Directorate starts the new year with an electro-magnetic bang at the Lab's Big Explosive Experimental Facility (BEEF) at the Nevada Test Site. This Phoenix Project shot is the first in a series of pulsed-power experiments to be conducted there.

PEOPLE

The Lab celebrates Martin Luther King Jr. with keynote speaker Terrence Roberts of the Little Rock Nine Foundation.

The Laboratory's work in national security is the focus of a two-day visit from members of the Senate Armed Services Committee to hear presentations on the Lab's approach to stockpile stewardship, its work in nonproliferation, cyber security, the National Ignition Campaign, and Advanced Simulation and Computing, among other topics.

University of California senior vice president for business and finance Joseph Mullinix resigns to take a job with the National University of Singapore as the deputy president for administration.

Former Lab Director and LANL designated Laboratory Director Michael Anastasio gives an update on the transition to Los Alamos National Security, LLC (LANS) and announces its management team.

Alain Bugat, chairman of the Comissariat à L'Énergie Atomique, France's energy agency, visits the Laboratory for overviews of the Laboratory and its programs during a special two-day visit.

OPERATIONS

DOE/NNSA launches the process to compete the contract to manage and operate the Laboratory.

The Lab's Ergonomics Program refocuses its efforts and seeks directorate partnerships in evaluating work stations.

Food and coffee service closes at the South Café due to site changes, population decreases in the south mall region and the opening of the new Central Café.

NewsOnline has a new look. In addition to the layout change, readers notice an easier way to navigate through *NewsOnLine* text.

The Laboratory's Return to Work (RTW) Program adds a new feature to its services. Employees and supervisors receive timely e-mail reminders of the need to return to work through the Health Services Department (HSD) after illness or injury absences of five days or more.

The Data Warehouse is decommissioned.

A new automated catering ordering tool goes online.

Due to cost-cutting efforts, the Computer Resource Center (CRC) closes. All future computer purchases are processed via program TRRs.

The University of California Board of Regents authorizes the university to pursue a number of amendments to the University of California Retirement System plans to facilitate the transfer to the new contractor for Los Alamos National Laboratory.

Due to reduced staffing in the LLNL Payroll Office, and available self-service resources, the Payroll and LITE telephone and window customer service hours are reduced.

FEBRUARY

SCIENCE & TECHNOLOGY

The Quantum Simulations Group (QSG) of Physics and Advanced Technologies' H Division conducts theoretical computer simulations of matter under extreme temperatures and pressures, water and other aqueous solutions, and nanoscale materials. Research appears in the Jan. 31 edition of the *Proceedings of the National Academy of Sciences*.

A team of international astrophysicists that includes Kem Cook of the Lab's Institute for Geophysics and Planetary Physics discovers a new planet five times the mass of Earth, the smallest extra-solar planet unearthed to date outside of our solar system.

Cometary and interplanetary dust samples from NASA's Stardust mission are displayed during an event for local media held at the Lab.

PEOPLE

Wayne Shotts, deputy director of Operations, retires after a 31-year Lab career and is honored at a reception. NNSA Administrator Linton Brooks pays tribute to Shotts, calling him "a national treasure."

Brent Scowcroft, former National Security adviser under presidents Gerald Ford and George H. W. Bush, chairs a VIP roundtable discussion "Unclear and Present Danger: Understanding and Responding to

See **2006,** *page 4*

QUOTABLES

"This is a very exciting time for the weapons program."

– Linton Brooks, NNSA administrator, on the future of the weapons labs.

"This is probably the one time in my life that I will have the opportunity to look at particles like this up close."

– Hope Ishii, post doc in the Physics and Advanced Technologies Directorate and Institute for Geophysics and Planetary Physics, on her work with the NASA Stardust project.

"It's dirt. Basically, it's cosmic crud."

– John Bradley, director of the Institute for Geophysics and Planetary Physics on the material brought back by the Stardust mission.

"Students must take something they do not know but are curious about, and then devise a method to unravel a mystery. What could be more exciting than solving a mystery?"

– Cherry Murray, deputy director for Science and Technology, on the Tri-Valley Science and Engineering Fair.

"The fact that we stumbled on one means there are thousands of them out there."

– Astrophysicist Kem Cook on the discovery of a new extrasolar planet.

"We are using quantum simulations to unravel how the properties of a material change at the nanoscale."

– Eric Schwelgler of PAT's Quantum Simulations Group

"He's a national treasure."

– Linton Brooks commenting on Wayne Shotts.

"Don't hurry. Bicycling is not racing."

– Lab computer programmer Chuck Parrish on commuter bicycling.

"Our research suggests that men, too, have a biological time clock — only it is different."

– UC Berkeley collaborator Brenda Eskenazi on men having a biological time clock.

LOOKING BACK AT 2006

2006

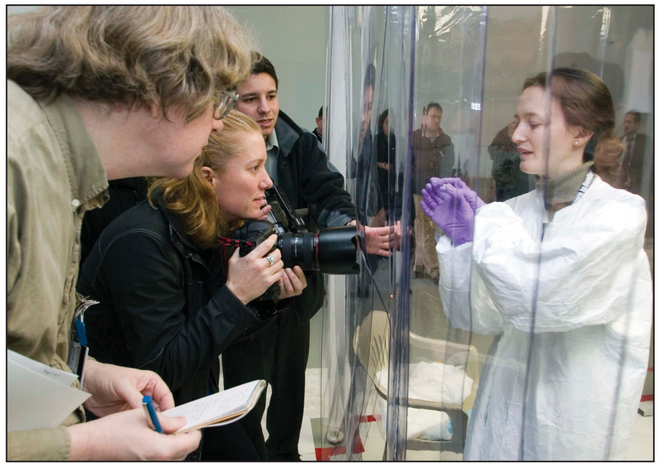
Continued from page 3

WMD Latency and Related Destructive Potential Emerging in Contemporary Societies," presented by the Lab's Center for Global Security Research (CGSR).

Harvard college astronomy professor Robert Kirshner discusses what is said to be Einstein's greatest blunder — the cosmological constant — in "A Blunder Undone: Albert Einstein and the Accelerating Universe," part of the Director's Distinguished Lecturer Series.

OPERATIONS
The Lab's Security Department announces scaled-down services at the Main Site and Site 300 due to a reduction in funding. Among the changes are reduced hours at the Westgate Badge Office and Locks, Keys and TESA Group, and the closure of Post 3B at 3rd Street and Avenue B.

New access requirements for the Nevada Test Site are announced for Lab employees on assignment at the test site.



Cometary and interplanetary dust samples from the NASA Stardust mission were on display for the media this year. Scientists believe Stardust will provide insight into the origins of the solar system. Samples arrived at the Lab, and scientists began analyzing the samples. Hope Ishii, right, displays a sample of aerogel with cometary tracks to members of the media.

MARCH

SCIENCE & TECHNOLOGY
Research conducted by Lab scientists in collaboration with scientists from the Carnegie Institution of Washington and the Atomic Weapons Establishment in England focuses on synthesizing unique noble metals under extreme conditions. The research, which could benefit the semiconductor industry, appears in the journal *Science*.

Research conducted at the Laboratory and Boston University shows that many of the complex biochemical networks that humans and other advanced organisms depend on for their existence could not have evolved without oxygen. The research appears in the March 24 issue of the journal *Science*.

Research carried out by Lab scientists with Kyushu University and the U.S. Geological Survey sheds light on the evolution and internal dynamics of medium- and large-size moons of the outer planets in our solar system.

The Laboratory, in conjunction with Rice University, Los Alamos National Laboratory and the American Physical Society, sponsors the Sixth International Conference on High Energy Density Laboratory Astrophysics (HEDLA-06).

The Lab's annual Science on Saturday Lecture Series kicks off with "Waves in Nature: Lasers to Tsunamis and Beyond," presented by Ed Moses and Rick Sawicki of LLNL and teacher Dan Burns of Los Gatos High School.

The Tri-Valley Science and Engineering Fair returns for its 10th season and moves to the Robert Livermore Community Center in Livermore. More than 300 students participate with more than 200 projects.

PEOPLE
George Miller is confirmed as interim director of the Laboratory by the UC Regents and immediately lays out his vision for the next 18 months, unveiling his A List in a Lab-wide all-hands address.

Hank O'Brien of the Defense and Nuclear Technologies (DNT) Directorate is appointed as Reliable Replacement Warhead (RRW) program manager.

Kevin Starr, professor of history at the University of California, presents "The San Francisco Earthquake and Fire of April 1906 — Lessons Learned," and Mary Lou Zoback, senior research scientist at the U.S. Geological Survey, discusses "A Century of Progress in Understanding Earthquakes and Their Effects." Both talks are part of the Director's Distinguished Lecturer Series.

Women's History Month begins with educator and speaker Rosalyn Taylor O'Neale's presentation "Driving Change and Creating Greatness."

The Laboratory's Postdoc Council, led by Lori Souza, council chair and Cherry Murray, deputy director for Science and Technology, honors three postdocs — Ann Clatworthy of Biosciences; Reed Patterson of Physics and Advanced Technologies (PAT); and Kathryn Swan of Computation for their many contributions to the postdoc networking group.

The team from NAI (Nonproliferation, Arms Control, and International Security Directorate) — Christel Cantlin, Leonard Walton, Jenni De Pruneda and Jason Miller — wins the second annual African-American History Bowl sponsored by the Association of Black Laboratory Employees (ABLE) in recognition of Black History Month.

OPERATIONS
The Lab's Special Response Team participates in the SWAT World Challenge at Camp Robinson, Ark.

Associate Director Ray Juzaitis announces the realignment of the Nonproliferation, Arms Control and International Security (NAI) directorate. The directorate's name is changed to the Nonproliferation, Homeland and International Security Directorate or NHI.

APRIL

SCIENCE & TECHNOLOGY
A team of LLNL researchers continues development of a biological monitoring system that can detect airborne pathogens and sound a warning in less than a minute. Called Bioaerosol Mass Spectrometry, or BAMS, the system won a 2005 R&D 100 award as one of the year's most promising technologies.

LLNL and UC Davis announce the development of a next-generation radiation therapy system. The two institutions commit more than $3 million to develop a compact, relatively inexpensive proton-beam therapy system that can effectively zap tumors with powerful, focused radiation, while causing minimum collateral damage to nearby healthy tissue and organs.

Scientists report they have successfully observed the transformation of neutrinos from one type to another. Three Lab physicists — Peter Barnes, Doug Wright and Ed Hartouni — are participants in the Main Injector Neutrino Oscillation Search (MINOS) project that announced the first results of the new neutrino experiment.

Newly published research shows that the outermost ring of Uranus, discovered late in 2005, is bright blue, making it only the second known blue ring in the solar system. The research was conducted by Lab scientist Seran Gibbard and fellow scientists from UC Berkeley, the SETI Institute and the Space Science Institute.

LLNL researchers converge on San Francisco for the 100th Anniversary Earthquake Conference, "Managing Risk in Earthquake Country," to show off simulations of the 1906 earthquake.

PEOPLE
Director George Miller announces three appointments to his senior management team and names a manager for leading LLNL's transition efforts for the upcoming contract competition. Dave Leary is named acting deputy director for Operations, Bruce Warner acting associate director-at-large, and Larry Ferderber acting director's chief of staff. Barbara Peterson is tapped to lead the contract transition efforts.

See **2006,** *page 5*

LOOKING BACK AT 2006

2006

Continued from page 4

Lab attorney Matt Edwards returns to LLNL after serving with the U.S. Army Judge Advocate General's Corps, or JAG, in Guantanamo Bay, Cuba for 14 months. A member of the California Army National Guard, Edwards provided legal services to members of the military.

Members of the Navajo Council, led by Council speaker Lawrence T. Morgan, visit the Laboratory. The Navajo Nation has the country's largest legislative tribal council and also is the largest energy-producing tribe.

OPERATIONS
On April 25, the Laboratory conducts its annual integrated emergency preparedness and response exercise. The month of April also marks the 100th anniversary of the great San Francisco earthquake of 1906.

A National Nuclear Security Administration plan calls for moving plutonium from Livermore by 2014, and consolidating all U.S. work involving plutonium at a single facility by 2022. Tom D'Agostino, NNSA's deputy administrator for Defense Programs, testifies about a consolidation plan for the DOE weapons complex before a House panel.

The Laboratory's melanoma surveillance program, also known as "Mole Patrol" or "Spot Check," officially ends April 30 after 22 years. The program began in 1984 after studies showed an increase in melanoma incidence among Lab employees.

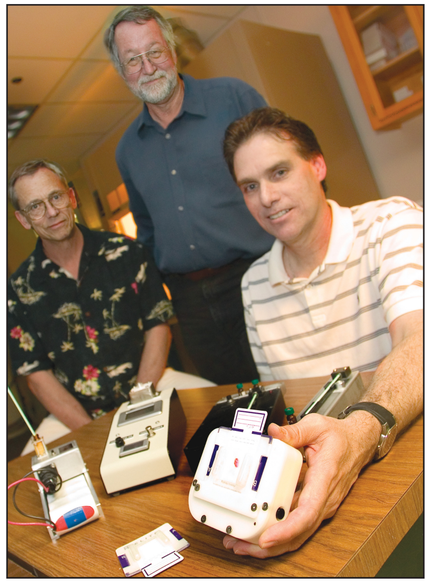
MAY

SCIENCE AND TECHNOLOGY
A new explosives detection technology — called the Easy Livermore Inspection Test for Explosives or ELITE — is developed by LLNL scientists, and wins a Federal Laboratory Consortium award for excellence in technology transfer. ELITE can detect more than 30 different explosives within one to four minutes.

LLNL scientists, in partnership with two federal departments (Homeland Security and Agriculture) and UC Davis, announce a rapid diagnostic test that simultaneously tests for foot-and-mouth disease and six other look-alike diseases in livestock. The new test, which is still undergoing the process of validation, reduces the period for diagnosing all seven diseases from days to hours.

The work of the pathogen informatics team in LLNL's Biosciences directorate pays rich dividends, as a Livermore signature of the peculiar virus that causes Severe Acute Respiratory Syndrome, or SARS, contributes to a landmark study of SARS in non-human primates. The work is conducted with the U.S. Army Medical Research Institute of Infectious Diseases.

LLNL researchers create a membrane made of carbon nanotubes and silicon that may offer, among many possible applications, a less expensive desalinization method. The nanotubes, special molecules made of carbon atoms in a unique arrangement, are hollow and more than 50,000 times thinner than a human hair.



Among the key developers of the ELITE explosive screening technology are, from left: Del Eckels, John Reynolds and Peter Nunes, all of the Lab's Forensic Science Center. They are shown with some of the early ELITE prototypes and the current card version, which is resting in front on the table.

One illustration of how far the science of earthquake safety has come in the 100 years since the 1906 San Francisco earthquake is the design and construction of the National Ignition Facility. Throughout the design and construction of NIF, numerous computer simulations are used to determine the "seismic loads" for structures holding NIF's optical components securely in place and providing information for peer reviews of NIF designs.

PEOPLE
Director Michael Anastasio leaves the Laboratory June 1 to take on the role of director of Los Alamos National Laboratory when Los Alamos National Security Limited Liability Corporation (LANS, LLC) assumes LANL's management.

OPERATIONS
The U.S. Department of Energy's National Nuclear Security Administration seeks comments on a draft Request for Proposal for the competitive selection of a management and operating contractor for the Laboratory.

JUNE

SCIENCE AND TECHNOLOGY
Laboratory scientists determine that men's biological clock is ticking, too. The research shows that the genetic quality of sperm gradually worsens as men get older, increasing a man's risk of being infertile, fathering unsuccessful pregnancies and passing along dwarfism and possibly other genetic diseases to his children.

The Joint Genome Institute (JGI) finishes its 100th microbial genome sequence.

The Laboratory joins in the UC/national laboratory collaboration to create the Institute for Material Dynamics at Extreme conditions, the newest UC Multi-campus Research Program.

NNSA and IBM team up to announce a new mark achieved on BlueGene/L, the world's fastest supercomputer. The record is set for achieving a sustained performance of 207.3 trillion floating-point operations per second (teraflops) on a scientific application, "Qbox."

Working with the Department of Homeland Security's Science and Technology Directorate and the Transportation Security Administration, the Lab announces the Air Cargo Explosives Detection Pilot Program, launched at San Francisco International Airport in late summer.

Using a method of combining chemical and isotopic tracers, a team of Laboratory scientists completes a study that helps pinpoint the sources of nitrate in the Tri-Valley's groundwater supply.

The "Peloton" procurement for the Laboratory's Multi-Programmatic and Institutional Computing (M&IC) program is awarded to APPRO, a high performance computing company based in Milpitas. Named for the pack of riders who set the pace in bicycle races such as the Tour de France, "Peloton" makes increased high-end computing resources available for both unclassified research in a broad range of disciplines and classified stockpile stewardship work.

Advanced Simulation and Computing Program supercomputers at LLNL, BlueGene/L and ASC Purple, retain their ranking of one and three on the industry standard "Top500" list of the world's fastest supercomputers.

Astronomers at the 208th American Astronomical Society meeting in Calgary announce the discovery of the most distant cluster of galaxies ever found. The cluster also may be the most massive one seen at such an early era in the universe. Adam Stanford, a research scientist at UC Davis and at the Laboratory, helps with the discovery.

The Physics and Advanced Technologies and Engineering directorates work with the Department of Energy's Office of Science to help the United States meet its obligation to construct and operate ITER, formerly known as the International Thermonuclear Energy Reactor.

See **2006,** *page 8*

From science advancements to employee excellence, the Laboratory had a banner year in 2006. Here is an across-the-campus sampling of its achievements:

2006 TECHNOLOGY AWARDS & EMPLOYEE RECOGNITION

"From the Laboratory to the Marketplace," a marketing and public relations video produced by the Laboratory's **Industrial Partnerships and Collaboration (IPAC)** office in collaboration with the Laboratory Television and Video Production group, receives two prestigious industry awards for 2005.

A new explosives detection technology — called the Easy Livermore Inspection Test for Explosives, or **ELITE** — is developed by LLNL scientists, and has won a Federal Laboratory Consortium award for excellence in technology transfer. ELITE can detect more than 30 different explosives within one to four minutes.

NNSA's **Advanced Simulation and Computing (ASC)** Program supercomputers at LLNL dedicated to stockpile stewardship continue to dominate the newly released "Top500" ranking of the world's fastest high performance computers.

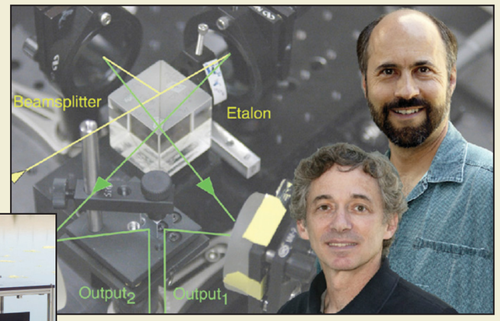
Computerworld honors the Lab's **ASC program** for its role in the development of BlueGene/L.

The Laboratory's Center for Applied Scientific Computing Director **John Grosh** makes HPCwire's 2006 "People to Watch" list. This is the second time Grosh has landed on the prestigious list, but his first wearing an LLNL hat.

The Laboratory's **Year of Physics** campaign wins two awards from the National Association of Government Communicators.

Susan Allen is recognized by the U.S. Department of Homeland Security (DHS) for her role in preparing the federal government's first biennial bioterrorism risk assessment.

Richard Blake, group leader in the Operations and Regulatory Affairs Division of the Environmental Protection Department (EPD), is appointed by California Gov. Arnold Schwarzenegger to the Board for Geologists and Geophysicists.



The Left: Bioaerosol Mass Spectrometry (BAMS) team garners the 2006 Alice Hamilton Award. Above: The Externally Dispersed Interferometer with David Erskin, LLNL, and Jerry Edeistein of UC Berkeley wins and R&D 100 award. Right: Scott Wilks and Max Takab, awarded the 2006 Award for Excellence in Plasma Physics Research.

The Lab captures **seven R&D 100 awards** for developing advanced technologies with commercial potential. Awards include: the Easy Livermore Inspection Test for Explosives (ELITE); UltraSpec radiation detector; the Sonoma Persistent Surveillance System; a high-average power wavelength conversion device that can change the "color" of laser light; Externally Dispersed Interferometry (EDI) to conduct precision measurements of stars or sunlit targets; Sapphire, an analytical algorithm to explore large, complex data sets; and Babel, a tool that addresses software incompatibility.

Plasma physicists **Max Tabak and Scott Wilks** receive the 2006 Award for Excellence in Plasma Physics Research of the American Physical Society.

Lab retiree **Mike Uzelac,** who was director of LLNL's Conflict Simulation Laboratory and part of the Infrastructure and Force Protection Division in the Nonproliferation, Homeland and International Security directorate, is honored for his significant contributions to the Department of Defense.

Plant Engineering's "Contractors Construction Safety Orientation at LLNL" earned awards from AEGIS and a *Digital Video Magazine*. The video, which also has a Spanish language version, is required viewing for all subcontractors performing construction work at the Lab.

Deputy Director Cherry Murray is elected APS vice president for 2007.

Richard Christensen of the Materials Science and Technology Division is awarded the prestigious Nadai Medal, one of the highest awards in mechanical engineering presented by the American Society of Mechanical Engineers.

Stanford professor and former Lab postdoc **Wendelin Wright** and Stony Brook University assistant professor and Livermore collaborator **Michael Zingale** receive Presidential Early Career Awards for Scientists and Engineers in a White House ceremony.

The U.S. Army names two Lab employees as winners of a "Ten Greatest Inventions for 2005" award. **Jim Trebes** of M Division and **Mike Newman,** a senior technical associate in Electronics Engineering, were part of a team that worked on a surveillance technology for tracking terrorists and protecting the U.S. military.

A Laboratory-produced **construction safety video** wins two prestigious industry awards.

Steve Homann of the Hazards Control Department's Safety Program Division receives the first LLNL Distinguished ES&H Contributions Award. According to the award committee, Homann is "nationally and internationally recognized for his work in radioactive dispersion consequence assessment."

Three Laboratory employees win awards from *Science Spectrum* magazine for being top performers in their respective science fields. **Robert Shepard,** Administration and Human Resources Directorate, is the recipient of the 2006 Emerald Honors Educational Leadership Award. **Hope Ishii,** Physics and Advanced Technologies, and **Dean Williams,** Computation, both earned the magazine's Trailblazer Award, which recognizes outstanding minority and women professionals in the science arena, whose leadership and innovative thinking on the job and in the community extend throughout and beyond their industry.

Engineering's Roger Miller receives an NNSA letter of commendation for UN Security Council assistance.

The Lab's six-member **Protective Force Division team** captures second place in the annual Best of the West SWAT competition for law enforcement special-response teams.

Physicist **James Wilson** of B Division receives the Hans Bethe Award from the American Physical Society for his outstanding accomplishments in astrophysics and aerophysics. Wilson is best known publicly for his supernova calculation, proposing how one works and why it explodes.

Masaru Takagi of the NIF Directorate receives the 2006 Larry Foreman Award for Excellence and Innovation in Inertial Confinement Fusion (ICF) Target Fabrication at the 17th Target Fabrication Meeting in San Diego.

A large-scale electronic structure simulation of the heavy metal molybdenum conducted on the world's fastest supercomputer, **BlueGene/L,** earns a team led by former and current Laboratory scientists the 2006 Gordon Bell Prize for "peak performance."

The UltraSpec technology team of Stephan Friedrich, Owen Drury, Jan Batteux, Simon Labov and Thomas Niedermayr won and R&D 100 Award.

LLNL engineer **Robert J. Budnitz** and physicist **Karl van Bibber** are named fellows of the American Association for the Advancement of Science (AAAS). Election as a fellow is an honor bestowed upon AAAS members by their peers.

Lab researchers **Peter Amendt** and **Gilbert (Rip) Collins** are named 2006 Fellows of the American Physical Society (APS) for their contributions to inertial confinement and high-energy-density physics.

The **Terascale Simulation Facility (TSF) Project** is awarded a DOE secretary's Project Management Award of Achievement. Anita Zenger, TSF project manager, accepted the award on behalf of the project team in an Alexandria, Va. ceremony.

Lab electrical engineer **Grace Clark** is elevated to the grade of fellow by the Institute of Electrical and Electronics Engineers (IEEE) in recognition of her pioneering contributions in block adaptive filtering.

Marcia Kellom of Engineering becomes the first Lab recipient of a service excellence award from the California Caucus of College and University Ombuds.

The **BAMS team** garners the 2006 Alice Hamilton Award in biological sciences. The award recognizes scientific excellence.

Deputy **Director Cherry Murray** is elected APS vice president for 2007.

Engineering's **Roger Miller** receives an NNSA letter of commendation for UN security council assistance.

LLNL scientist **Ken Moody** is featured in the Oct. 3 edition of "Nova Science Now," about the decades-long quest to create the elusive element 114.

The **Defense and Nuclear Technologies (DNT) Directorate** presents its Pollution Prevention Program awards to employees from six teams — from both the Lab's main site and Site 300.

Waste minimization efforts at the Lab, Site 300 and the Nevada Test Site garnered four **DOE annual pollution prevention awards.** Three of them (Flash X-Ray, Space Action Team, JASPER gas gun) earned "best in class" and the fourth (Contained Firing Facility) won in the "environmental stewardship" category.

Vasily Bulatov, Max Tabak and Kai Vetter earned the 2006 Edward Teller Fellowship award. The award allows the recipients to do a year's worth of self-directed work that will benefit the Laboratory.

John Palmer of SEP earns the Quality Assurance Award

Dave Brown, LLNL's classification and export control officer, receives the DOE Certificate of Excellence.

2005 APS Fellows are awarded to **Joe Wong, Vasily Bulatov, Harry Radousky, John Moriarty and Carlos Iglesias.**

George Campbell earns Academy of Certified Hazardous Materials Managers Awards.

Grace Clark is elevated to the grade of fellow by the Institute of Electrical and Electronics Engineers (IEEE).

Dean Williams, above, and Hope Ishii, left, receive 2006 Top Minorities in Science Trailblazer Awards from *Science Spectrum* magazine.

Bob Shepard receives a 2006 Emerald Honors in Educational Leadership Award from *Science Spectrum* magazine.

LOOKING BACK AT 2006

QUOTABLES

"This is a fitting memorial to all that Carl was….he truly was a renaissance man."

– George Miller on the dedication of Lake Haussmann

"Soaring oil prices, pollution issues and short supplies all point to why we need alternative methods of energy. The time for nuclear energy has arrived."

– Lab engineer Susana Reyes on the need for nuclear energy

"It's an alternative history, just like the DaVinci code."

– Lab physicist John Perkins on his novel "A Day in the Life."

"When we look into human dynamics, we find that humans behave frequently in an intermittent pattern."

– Biomedical scientist Eivind Almass on his study that readership peaks within a few hours of a news story being posted on the Internet and then rapidly falls

"My interest in chemistry in general and tumeric in particular goes back to my childhood when I watched my mother cook in our home in Madras (India)."

– Computational chemist Krishnan Balasubramanian on his study of the spice to treat Alzheimer's disease

"With ASCI White the ASC program came into its own."

– Mike McCoy on the decommissioning of ASCI White

"This competition will allow us to showcase to the entire nation the very best our Laboratory has to offer."

– Director George Miller on his selection to lead the UC/Bechtel contract team

"I am proud that the team produced a computing asset for the Lab that is second to none. The TSF positions the Lab well for the future."

– Barbara Atkinson of Computation on the Secretary's Project management Award of Achievement for the TSF team

The announcement of a program to screen passenger aircraft cargo for explosives came in 2006 during a press conference at the San Francisco International Airport. Taking part in the announcements were, from left, San Francisco Mayor Gavin Newsom; the Lab's Howard Hall, program leader for Countermeasures Test Beds; Don Prosnitz, deputy associate director for programs in the Nonproliferation, Homeland and International Security Directorate; and Lab Executive Officer Ron Cochran.

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Personnel from the Lab's National Atmospheric Release Advisory Center/Interagency Modeling and Atmospheric Assessment Center support the Department of Energy and the Department of Homeland Security in the June DHS TOPOFF 4 Command Post Exercise (T4 CPX), which is tied to the FBI-led full-scale Marble Challenge 06-02 Exercise and the FEMA-led Forward Challenge 06 mandated continuity of government operations exercise.

Using the Europa femtosecond laser in the Lab's Jupiter Laser Facility, Lab physicists convert a free-standing nanofoil of gold into a plasma of electrons and positive ions.

PEOPLE
Lab nuclear engineer Susan Reyes promotes the application of nuclear science and technology and encourages young students to seek careers in nuclear science-related fields.

The Council of Energy Resource Tribes Executive Director David Lester meets with Laboratory officials to discuss formalizing LLNL's advisory relations with the tribes.

UC Regents visit the Laboratory.

The NATO Parliamentary Assembly Political Committee's Sub-Committee on Transatlantic Relations visits the Laboratory.

Maureen McCarthy, director of Science and Technology Transition within the Department of Homeland Security, visits the Laboratory.

The 2006 Computational Chemistry and Materials Science (CCMS) summer institute kicks off its sixth year.

David Conrad, deputy associate director for Engineering, leaves his position on the Board of the Livermore Valley Education Foundation after 24 years of public service to Livermore schools.

Jerry Paul, principal deputy administrator for the National Nuclear Security Administration, announces his resignation.

S&TR writer Ann Parker announces publication of another mystery novel. The second of Parker's novels, "Iron Ties," is released by publisher Poisoned Pen Press.

A clot extraction system for stroke victims and those at risk, made with a shape memory polymer device developed by a team lead by Livermore's Duncan Maitland, is featured on the National Institute of Biomedical Imaging and Bioengineering's (NIBIB) Website.

Energy Secretary Samuel Bodman administers the oath of office to Raymond Orbach to be the Department of Energy's first under secretary for Science.

Pam Smith is named Laboratory Services manager.

Friends, colleagues, former Lab directors and dignitaries from UC and DOE pack the Bldg. 123 auditorium to say farewell and thank you to LLNL's ninth director — Michael Anastasio, who left to become the ninth director of the Los Alamos National Laboratory.

The National Security Panel of the University of California President's Council for the National Labs meets at the Laboratory.

OPERATIONS
The late physicist Carl Haussmann is honored in a ceremony when the Laboratory dedicates the drainage retention basin in his name.

The comment period closes for the draft Request for Proposal for the competitive selection of a management and operating contractor for the Laboratory.

The annual ES& H Fair features more than 60 booths.

The Laboratory's Earned Value Management System is declared in compliance with the American National Standards Institute/Electronic Industries Alliance Standard 748-A.

The "Paws for a Cause" community project launches the 2006 "At HOME in the Community" portion of the 2006 HOME Campaign.

The Summer of Cyber Security lecture series opens with discussions about social engineering, booby-trapped

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Websites, Trojan pictures, phishing and pharming.

Due to an attack on an unclassified DOE/NNSA computer system, personal information of approximately 1,500 DOE federal and contractor employees is unlawfully obtained. This loss of information includes approximately 250 Laboratory employees and approximately 10 subcontractor employees.

NNSA pays for credit monitoring services for NNSA federal and contractor employees whose personal information was breached by a cyber attack.

The Employee and Organization Development Division (EODD) releases a new "Change Management" Website for employees and managers who want to take an active role in navigating through changing times in their workplace and personal life.

The comment period for prospective bidders on the fee increase for the final LLNL Request for Proposals (RFP) is extended until June 27.

Congressman Richard Pombo helps secure projects for California's Congressional 11th District, including $8 million for the Homeland Operation Planning System (HOPS) program developed at the Laboratory. This program is conducted through the California National Guard in conjunction with the Laboratory.

Energy Secretary Samuel Bodman suspends the recently announced contractor pension and medical benefits policy for one year.

George Miller briefs the UC Regents on activities around the Lab during a visit.

The current Institutional eForms Library enters the final stages of upgrading from legacy software and hardware environments. The previous suite of electronic forms is moved to a Web-based system offering enhanced capabilities for LLNL.

Lab firefighters conduct the annual Site 300 prescribed burn.

The Lab's Security Department announces new hours at the Delivery Vehicle Inspection Station (DVIS).

With the approval by NNSA's Livermore Site Office, the Superblock returns to normal capacity.

JULY

SCIENCE AND TECHNOLOGY
Lab astrophysicists, part of an international collaboration, narrow the search for the source of X-ray emissions by viewing a comet that is breaking up as it approaches Earth.

The Lab captures seven R&D 100 awards for developing advanced technologies with commercial potential (see pages 6-7).

The National Ignition Facility is 87 percent complete, with 16 of the 192 beams commissioned.

The Laboratory participates in 2006 CAPEX (Capability Demonstration Exercise), a nuclear weapons exercise, in Cheyenne.

Computational chemist Krishnan Balasubramanian uses computer modeling to demonstrate that the spice pigment curcumin has unique characteristics that may help prevent and even treat Alzheimer's disease.

The Laboratory and UC San Diego review the results of large-scale and more detailed simulations of climate change and the cosmology of the early universe by combining the high-performance computing capabilities and scientific expertise of both institutions.

Biomedical scientist Eivind Almass co-authors a readership study of new articles on the Internet, showing that readership peaks within a few hours and then rapidly falls.

JGI announces it will sequence the DNA of bioenergy crop plants switchgrass and cassava, other important agricultural commodities such as cotton, and microbes geared to break down plant material to render biofuels, to round out the roster of more than 40 projects.

Livermore researchers, collaborating with UC Berkeley, UC Davis and the National Science Foundation Center for Biophotonics Science and Technology, demonstrate their ability to probe single molecules of a novel fluorescent protein.

Phoenix produces 67 million amps in a pulsed-power shot for a plutonium experiment at the Nevada Test Site.

PEOPLE
Livermore scientists participate and co-host the "Plutonium Futures: The Science 2006" conference in Monterey.

Physicist John Perkins promotes "A Day in the Life," a novel based on the well-known conspiracy theory that the Beatle's Paul McCartney had died in an auto accident.

About 300 undergraduate and graduate students spend the summer at the Lab studying and conducting research.

The Lab's first "Heart and Sole Walking Program" reaches the finish line in the Central Café with a celebration of the success of its participants during the 12-week period. LLESA sponsored the program to encourage employees to exercise and walk to better health.

Summer students learn more about the many fellowships and scholarships available to them through government and other agencies during a panel discussion in the Bldg. 543 auditorium.

Pam Smith is named acting AD of Lab Services.

Chief Cyber-Security Officer Mark Graff offers guidance for safe and secure computing in a special presentation.

Department of Homeland Security Secretary Michael Chertoff learns more about a DHS pilot program to screen aircraft cargo for explosives from LLNL researchers during a visit to San Francisco International Airport.

Team NHI (Nonproliferation, Homeland and International Security Directorate) wins the final round of the first LLNL American History Bowl.

NNSA Administrator Linton Brooks makes a brief visit to the Laboratory to receive an update on Nonproliferation, Homeland and International Security Directorate projects, as well as to discuss nuclear issues with senior managers.

Employees dedicate a new memorial rose garden to LLNL veterans near Lake Haussmann. Roses from a previous garden planted some 20 years ago near the Lab's East Gate were successfully transplanted to the new location.

OPERATIONS
The final Request for Proposal is issued for the Laboratory contract.

The UC Regents tap George Miller to lead the UC-Bechtel team in the Lab contract competition.

ASCI White, the scalable platform that confirmed Livermore as a world leader in high-performance computing, is shut down.

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QUOTABLES

"The essence of our nuclear deterrent is the people in our complex who maintain our nuclear capabilities."

– George Allen, director of NNSA's Office of Transformation

"We're talking about a mineral that forms around 3,000 degrees Kelvin, which means it formed close to the hot infant star….If we found it in the comet, then how the heck did it get out there?"

— John Bradley, director of LLNL's IGPP, on the analysis of stardust from comet Wild 2

"We went to a comet and brought it back. Who would have ever thought it could be done?"

— Giles Graham, LLNL researcher on the Stardust team

"Volunteering gives people a good feeling. It's a great way to get connected to the community and meet other lab volunteers as well. It would be wonderful if there were Lab volunteers in programs like this throughout the entire year, not just during the HOME Campaign."

– Cindy Gardner, a 2006 HOME Campaign co-chair

LOOKING BACK AT 2006

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The "At HOME in Our Community" project donates school supplies in the "Back 2 School Giveaway."

The third summer installment of the Cyber Security Program's "100 Days of Cyber Security" focuses on wireless devices.

More than 70 employees gather at the Martinelli Event Center in Livermore to discuss and share information on the Lab's programmatic and operational deliverables and expectations for the next 14 months.

UC Regents review the plan for the reinstatement of UC and employee contributions to the UCRP.

The Safety and Environmental Protection Directorate sponsors a four-hour course (at no cost to participants) titled, "HPI Principles for Managers and Team Leaders."

Lab firefighters, working with units from Livermore-Pleasanton, Alameda County and the California Department of Forestry (CDF), quickly contain a grassfire that ignited just off Greenville Road.

The Laboratory develops procedures and processes to manage the termination of employees and non-employees who: will no longer be working at the Laboratory; are on leave of absence more than 90 days; or are transferring to another organization within the Laboratory.

Sandia changes the hours of operation for the Greenville Road entrance to the East Avenue Security Corridor to better coordinate with the co-located Delivery Vehicle Inspection Station.

UC declares support for the California Whistleblower Protection Act.

Lists of LLNL-authored documents that have been processed by the Laboratory's Information Management (IM) system and assigned UCRL numbers are made available for display or download from the Library's Website.

Keep California Beautiful (KCB) begins one of the largest coordinated cell phone collection campaigns in California on Earth Day to keep communities safe from the harmful effects of improperly discarded cell phones.

From left, Gene Berry, Francisco Espinosa-Loza, Salvador Aceves, Tim Ross and Vern Switzer display a Toyota Prius that has been converted to run on hydrogen instead of gasoline.

AUGUST

SCIENCE & TECHNOLOGY
Criticality professionals from LANL, Oak Ridge National Laboratory (ORNL), and Savannah River graduate from a unique special nuclear materials (SNM) "hands-on" safety training class in LLNL's Superblock.

Laboratory researchers, led by Jeffrey Tok of LLNL's BioSecurity and Nanosciences Laboratory, announce development of a new "barcode system" technology. It utilizes submicrometer layers of different metals including, gold, silver and nickel that act as "barcodes" for detecting a variety of pathogens ranging from anthrax, smallpox and ricin to botulinum.

The Energy and Environment Directorate's Energy Conversion and Storage Group receives a Toyota Prius hybrid vehicle converted to run on hydrogen instead of gasoline. The car serves as a means for LLNL, part of the Department of Energy's "National Hydrogen Storage Project," to demonstrate advanced hydrogen storage.

Lab physicists unveil the Axion Dark Matter Experiment (ADMX) — a device to research the mysteriously ubiquitous particle known as an axion and its relationship to dark matter. Axions haven't truly been found yet in experiments, but when detected, will help define how our galaxy came together, the nature of quantum physics and how much of the dark matter is made up of these elusive particles.

PEOPLE
Tom Isaacs, director of the Lab's Office of Policy, Planning and Special Studies, is appointed to an international board of counselors to provide policy advice and information to the president and senior staff of Japan's Nuclear Waste Management Organization (NUMO).

OPERATIONS
The Department of Homeland Security's (DHS) Science and Technology Directorate names the Lab's Site 300 as one of 18 sites in 11 states that have advanced to the next phase in the competitive process for the proposed National Bio and Agro-Defense Facility (NBAF.)

In a major realignment, Chemistry and Materials Science (CMS) and Biosciences merge into one directorate. It is titled Chemistry, Materials and Life Sciences and is led by Tomás Diaz de la Rubia. Elbert Branscomb, former associate director of Biosciences, serves as senior scientific adviser to the new directorate.

SEPTEMBER

SCIENCE & TECHNOLOGY
The DOE Joint Genome Institute announces the first complete DNA sequence of a tree, the poplar or black cottonwood. The sequence, featured on the cover of the Sept. 15 edition of the journal *Science*, provides the blueprint that may lead to the development of trees as an ideal "feedstock" for a new generation of biofuels.

New Laboratory research uncovers compelling evidence of a link between warming sea surface temperatures (SSTs) and increases in hurricane intensity. Ben Santer of the Lab's Program for Climate Modeling and Intercomparison is lead author of a paper that appears in the *Proceedings of the National Academy of Sciences*.

AX Division's turbulence research that has important implications for supernovae and other extremely high Reynolds-number applications appears on the cover of *Nature Physics*.

Research by a team of scientists, including Lab physicists Peter Weber and Ian Hutcheon, explains how viruses interact with cells and in the attribution of bioterrorist acts. Their work is published in the journal *Science*.

PEOPLE
Cherry Murray, the Lab's deputy director for Science and Technology, is elected vice president of the American Physical Society (APS) for 2007, an appointment that will last four years.

NASA astronaut and former LLNL engineer Jose Hernandez returns to the Lab and provides a presentation in honor of Hispanic Heritage Month.

Elbert Branscomb presides over the final performance awards for members of the former Biosciences Directorate.

OPERATIONS

Business Services launches ePay, a new and more versatile Web-based travel reimbursement system that replaces the former system, Extensity.

The Health Services Department reports an increase in employees diagnosed with Valley Fever, also know

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LOOKING BACK AT 2006

2006

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s as *Coccidioidomycosis*. Valley Fever primarily affects those who work or visit Site 300, particular those involved in outdoor activities with potential exposure to dust.

A solemn flag ceremony at the Lab's Superblock honors victims, including police and firefighters, who died during the terrorist attacks of Sept. 11, 2001.

The HOME Campaign "At HOME in our Community" highlights Livermore's Camp Arroyo, a 138-acre park that offers local students nature exploration and environmental education.

The HOME Campaign announces the theme for the Oct. 25 Run for Home is "Builders are Us."

The newly formed Chemistry, Materials and Life Science Directorate holds its first annual picnic to mark completion of the merger of the Bioscience and Chemistry and Materials Science directorates.

Dave Leary, deputy director for Operations, greets Jose Hernandez, former LLNL engineer, who talked about his astronaut training experience during a presentation in honor of Hispanic Heritage Month at the Lab. Hernandez joined NASA in 2004 and will work various technical assignments until assigned to a spaceflight as a mission specialist. The talk was sponsored by the Lab's Work-Life Center and Amigos Unidos employee networking group, in partnership with the Sandia National Laboratories Hispanic Leadership Council.

OCTOBER

SCIENCE AND TECHOLOGY
Scientists from the Chemistry, Materials and Life Sciences Directorate, in collaboration with researchers from Dubna, the Joint Institute for Nuclear Research (JINR) in Russia, announce the discovery of the newest superheavy element, element 118. The discovery brings the total to five new elements identified by the Livermore-Dubna team.

An LLNL-industry team is one of three teams to be awarded a program contract by the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) to develop a personal digital assistant-sized radiation detector. The Livermore-led team, composed of Kyocera, the California Institute of Technology, eV Products and the University of Michigan, is awarded an $8.6 million contract under DNDO's Intelligent Personal Radiation Locator (IPRL) program.

Researchers from the DOE Joint Genome Institute and UC Davis characterize the genome sequences of nine different lactic acid-producing bacteria, which play a key role in the production of fermented foods and beverages.

Ninety science teachers from northern and southern California gather at the Lab for the seventh annual Edward Teller Science and Technology Education Symposium. The two-day symposium provides teachers with resources they can use to keep their classroom science instruction current.

PEOPLE
More than 1,200 runners, walkers and costumed groups, or "centipedes," participate in the 2006 Run for HOME to kick off the Lab's annual HOME Campaign.

The October "At HOME in Our Community" activity features the Open Heart Kitchen in Livermore. In addition to generous donations to the Lab's food drive program, which collected canned goods and non-perishable items for those in need, Lab employees help prepare box lunches that are distributed every Friday to low-income students in Livermore.

OPERATIONS
Director George Miller discusses safety, contract competition and transition, progress in national security missions, operations, program milestones, news from Washington, D.C., and awards and achievements during an all-hands address.

The Lab hosts "Got Science? Discover Science Saturday," a family event with activities highlighting science and technology at the Robert Livermore Community Center in Livermore.

The Central Alarm Station (CAS), the Laboratory's after-hours telephone center, which serves as the backup for onsite fire dispatch and provides communication and coordination in case of an onsite emergency, receives an upgrade. The CAS also functions as the central nervous system for Protective Force operations, including alarm monitoring and site video surveillance.

The National Ignition Facility's "Family Open House" attracts more than 1,325 attendees who tour the facility, watch educational videos and learn about clean rooms and safety programs.

NOVEMBER

SCIENCE & TECHNOLOGY
Using 3D models run on some of the fastest computers in the world, Laboratory physicists create a mathematical code that cracks a mystery surrounding stellar evolution by identifying the mechanism of how and where low-mass stars destroy the helium 3 that they produce during evolution.

The Laboratory makes a big splash at the fall meeting of the Materials Research Society. Co-chaired by Lou Terminello of the Chemistry, Materials and Life Sciences Directorate, the conference features three LLNL presenters.

Studies by Lawrence Livermore and Los Alamos national labs show that the aging of plutonium in U.S. nuclear weapons will not affect reliability over the next several decades. The classified studies were done for the Department of Energy's National Nuclear Security Administration (NNSA) and took five years to complete.

PEOPLE
More than 140 motorcyclists from the Laboratory, Sandia and outside the labs raise $2,712 in support of the Marine Corps Toys for Tots campaign, the Adopt-A-Platoon program and the Livermore Sentinels of Freedom.

Thirteen new Protective Force Division Security Police Officer cadets begin the Basic Protective Force Division Security Police Officer Academy.

OPERATIONS
The Laboratory offers courses on human performance improvement (HPI), a process used to reduce errors that can lead to accidents and injuries. HPI represents a new way of looking at how work is conducted and how errors can lead to undesired outcomes.

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The security posts at the east and west ends of the East Avenue Corridor (EAC) transfer to the control of Security Police Officers (SPOs) from the Laboratory's Protective Force Division. The change culminates a year-long study by the NNSA, LLNL and Sandia to find cost-effective ways to operate both sites.

DECEMBER

SCIENCE & TECHNOLOGY

LLNL analysis of particulate matter, or "stardust," captured by a NASA spacecraft from the comet Wild 2 reveals new clues about the origins of the solar system that counter existing theory. The research appears in the journal, *Science*.

Lab scientists for the first time validate the idea of using extremely short and intense X-ray pulses to capture images of objects such as proteins before the X-ray destroys the samples; a breakthrough for atomic resolution imaging of complex bio-molecules. At the same time, the team establishes a speed record of 25 femtoseconds for flash imaging.

New research shows that three types of deep-sea coral found in the Pacific Ocean off the Hawaiian islands grows slower and lives longer than previously believed, important information for conservation and management of precious coral fisheries.

An LLNL study shows the impact of planting trees, or forestation, on global warming. It confirms that planting trees in rainforests could help slow global warming.

According to research published in *Agricultural and Forest Research*, increasing temperatures in California during the next 45 years could negatively affect the quantity of almonds, walnuts, oranges, avocados and table grapes that Americans put on their tables.

Lab firefighter Captain Arnie Brockmire answers questions after his presentation "Making a Difference — Remembering the Impact of Hurricane Katrina." The talk was sponsored by the 2006 HOME Campaign.

OPERATIONS

In Washington D.C., the Nuclear Weapons Council decides to move forward with the Reliable Replacement Warhead strategy.

George Allen, director of the NNSA Office of Transformation, holds all-hands meetings at Livermore and Site 300 to discuss NNSA's plan for transforming the nuclear weapons complex, Complex 2030.

Public meetings in Livermore and Tracy seek public comment on "Complex 2030."

The 2006 campaign to Help Others More Effectively (HOME) concludes after raising $1.4 million for non-profit agencies.

EPD completes enhancement to a small, spring-fed stream course to increase wetland value at Site 300.

Newsline want ads return after a year's absence.

PEOPLE

Lori Souza, deputy associate director for operations in the Chemistry, Materials and Life Sciences Directorate, is appointed by George Miller as advocate for effective work control at the Lab.

John Wolf, a radiological characterization analyst in the Environmental Protection Department, is appointed to a two-year term as a director of the Academy of Certified Hazardous Materials Managers (ACHMM).

William Tobey, NNSA deputy administrator for Defense Programs, visits the Lab for a briefing on LLNL national security work.

Energy Secretary Samuel Bodman issues the first of periodic messages to DOE employees about the challenges and opportunities the department faces.

Nancy Pullen, a TRR in AX Division and avid painter, displays water color paintings of atmospheric atomic tests in the lobby of Bldg. 111.

On the cover

Featured technology this year included stardust exploration and findings, nanotubes, modeling materials, energy resources, Jasper gas gun, icy moons, chemical capabilities, earthquake technologies, cancer treatments, Elite technology, DNA sequencing, cargo screening, R&D 100 awards, turmeric studies, dark matter research, hurricanes, marine detection, poplar sequencing, new elements, cosmic stars and supercomputing.

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